

CLAIMS:

1. An electromagnetic driving unit for a loudspeaker assembly, which driving unit comprises a magnet part and a coil part which is capable of magnetically cooperating with the magnet part, the coil part being translatable along a translation axis with respect to the magnet part, the magnet part comprising two permanent magnets and an intermediate magnetic pole element which is sandwiched between the permanent magnets when viewed along the translation axis of the coil part, the intermediate magnetic pole element having a pole face which is magnetically directed towards an inner face of the coil part, wherein the magnet part further comprises two external magnetic pole elements, the permanent magnets and the intermediate magnetic pole element being sandwiched between the external magnetic pole elements, which have pole faces which are magnetically directed towards an outer face of the coil part.
2. Driving unit as claimed in Claim 1, wherein the coil part is situated between the two external magnetic pole elements.
3. Driving unit as claimed in Claim 1, wherein the coil part comprises a cylindrical coil having a coil axis which extends parallel to the translation axis of the coil part or which coincides with the translation axis of the coil part.
4. Driving unit as claimed in Claim 1, wherein the two permanent magnets of the magnet part are magnetized in directions parallel to the translation axis of the coil part, the magnetization direction of the one magnet being opposed to the magnetization of the other magnet.
5. Driving unit as claimed in Claim 1, wherein the pole elements are made of a ferromagnetic material .
6. Driving unit as claimed in Claim 1, wherein the pole faces of the external magnetic pole elements are formed by edge portions inclining towards the coil part.

7. Driving unit as claimed in Claim 1, wherein the pole face of the intermediate magnetic pole element has a radial dimension which increases from the permanent magnets towards a central portion of the pole face, viewed along the translation axis of the coil part.

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8. Driving unit as claimed in Claim 1, wherein the pole face of the intermediate magnetic pole element is a substantially convex surface.

9. Loudspeaker assembly provided with a frame, a diaphragm, and the electromagnetic driving unit as claimed in any one of the preceding Claims, wherein the diaphragm is attached to the coil part of the driving unit and is flexibly connected to the frame.

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10. Loudspeaker assembly as claimed in Claim 9, wherein the diaphragm is fixed to the coil part in an area extending between the two external magnetic pole elements.

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11. Loudspeaker assembly as claimed in Claim 9, wherein the diaphragm extends from the coil part in a substantially radial direction with respect to the translation axis of the coil part.

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12. Loudspeaker unit comprising an enclosure with a loudspeaker assembly as claimed in Claim 9, 10 or 11.